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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/662,248	09/15/2003	Sean Timothy Crowley	AMKOR-036C	2413

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EXAMINER	
WEISS, HOWARD	
ART UNIT	PAPER NUMBER
2814	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/662,248	CROWLEY ET AL.	
	Examiner	Art Unit	
	HOWARD WEISS	2814	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 May 2011*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *14-31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *14-31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Attorney's Docket Number: AMKOR-036C

Filing Date: 9/15/2003

Continuing Data: Continuation of 09/687,876 (now U.S. Patent No. 6,639,308); RCE filed 5/9/2011

Claimed Foreign Priority Date: 12/16/1999 (2, KRX)

Applicant(s): Crowley et al. (Alvarez, Yang)

Examiner: Howard Weiss

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114 was filed in this application after a decision by the Board of Patent Appeals and Interferences, but before the filing of a Notice of Appeal to the Court of Appeals for the Federal Circuit or the commencement of a civil action. Since this application is eligible for continued examination under 37 CFR 1.114 and the fee set forth in 37 CFR 1.17(e) has been timely paid, the appeal has been withdrawn pursuant to 37 CFR 1.114 and prosecution in this application has been reopened pursuant to 37 CFR 1.114. Applicant's submission filed on 5/9/2011 has been entered.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 24 to 31 are rejected under 35 U.S.C. 102(b) as being anticipated by Asano et al. (U.S. Patent No. 5,929,513).

Regarding claim 24, Asano discloses a lead frame **32** in fig. 3A-3C comprising a peripheral tie bar **43**, column 5 line 43, and a plurality of leads **33**, fig. 3B-C, column 5 line 16, extending from tie bar **43**, fig. 3B, in isolation from each other and segregated into two sets, fig. 3A, the leads of each set being linearly aligned and

arranged in spaced, substantially parallel relation to each other along their entire lengths such that each of the leads of one set extends in opposed relation to a respective one of the leads of the remaining set, each of the leads defining opposed, generally planar top and bottom sides; an inner end **33a**, column 5 line 29, and a notched surface (step portion), which is disposed in opposed relation to the bottom side and extends to the inner end **33a**, fig. 3C ,each of the leads **33** having a first thickness between the top and bottom sides which exceeds a second thickness between the bottom side and the notched surface, fig. 3C.

Regarding claims 25 to 27, Asano discloses the lead frame wherein the notched surfaces **33a** of the leads **33** extend in generally co-planar relation to each other wherein the bottom sides of the leads extend in generally co-planar relation to each other wherein the top sides of the leads extend in generally co-planar relation to each other, fig. 3C.

Regarding claim 28, Asano discloses a lead frame **32**, fig. 3A-C, comprising: a peripheral tie bar **43**, and a plurality of leads **33** extending from the tie bar **43** in isolation from each other and segregated into two sets, fig. 3A, the leads **33** of each set being linearly aligned and arranged in spaced, generally parallel relation to each other, fig. 3A, such that each of the leads of one set extends in opposed relation to a respective one of the leads of the remaining set, each of the leads defining opposed, generally planar top and bottom sides; an inner end **33a**; and a notched surface (step portion) which is disposed in opposed relation to the top side and extends to the inner end; each of the leads having a first thickness between the top and bottom sides which exceeds a second thickness between the bottom side and the notched surface, fig. 3C.

Regarding claims 29 to 31, Asano discloses the lead frame wherein the notched surfaces of the leads extend in generally co-planar relation to each other, wherein the bottom sides of the leads extend in generally co-planar relation to each other,

wherein the top sides of the leads extend in generally co-planar relation to each other, fig. 7.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 14 to 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee (U.S. Patent No. 6,157,074) and Huang et al. (U.S. Patent No. 6,414,385).

Regarding claim 14, Lee discloses a semiconductor package in fig. 7, comprising: a lead frame **1**, column 4 line 7, comprising a plurality of leads **6**, column 4 lines 15-16, segregated into two sets, fig. 7, the leads of each set being linearly aligned and arranged in spaced, substanbtially parallel relation to each other along their entire lengths such that each of the leads of one set extends in opposed relation to a respective one of the leads of the remaining set, fig. 7, each of the leads defining opposed, generally planar top and bottom sides, a semiconductor chip **3**, column 4 line **11**, having a top surface and a bottom surface, the bottom surface partially

overlapping and attached to the top side of at least one of the leads **6** of each of the sets, the semiconductor chip being electrically connected to a portion of the top side of at least one of the leads **6** which is positioned below the top surface, fig. 7; and a sealing material **13**, column 4 line 17, at least partially encapsulating the lead frame **1** and the semiconductor chip **3**, the sealing **13** having opposed, generally planar upper and lower surfaces, fig. 7.

But Lee does not disclose the bottom side of each of the lead is generally co-planar with the lower the lower surface of the sealing material.

However, Huang discloses the semiconductor package in fig. 8 wherein the bottom side of each of the lead **326**, column 5 line 7, is generally co-planar with the lower the lower surface of the sealing material **332**, column 5 line 9. At the time the invention was made; it would have been obvious to one of ordinary skill in the art to use the co-planar surface teaching of Huang with Lee' device, because it would have allowed further attaching other element such as heat spreader for better heat dissipation as taught by Huang, column 5 lines 31-35.

Regarding claim 15, Lee discloses the semiconductor package wherein: each of the leads **6** further defines an inner end **6** and a notched surface **9**, column 4 line 23, which is disposed in opposed relation to the bottom side and extends to the inner end; each of the leads **6** has a first thickness between the top and bottom sides which exceeds a second thickness between the bottom side and the notched surface, and the semiconductor chip **3** partially overlaps and is attached to the notched surface **9** of at least one of the leads **6** of each of the sets, fig. 7.

Regarding claim 16, Lee discloses the semiconductor package wherein the semiconductor chip **3** is electrically connected to the topside of at least one of the leads via a conductive wire **10**, column 4 line 34, which is covered by the sealing material **13**.

Regarding claims 17-20, Lee discloses the semiconductor package wherein the semiconductor chip **3** is electrically connected to the notched surface **9** of at least one of the leads **6** via a solder ball **5**, column 4 line 14, which is covered by the sealing material **13**, wherein the notched surfaces **9** of the leads **6** extend in generally co-planar relation to each other, wherein each of the leads further defines an inner end and a notched surface which is disposed in opposed relation to the top side and extends to the inner end **6;** and each of the leads has a first thickness between the top and bottom sides which exceeds a second thickness between the top side and the notched surface **9**, wherein the semiconductor chip **3** is electrically connected to the top side of at least one of the leads via a conductive wire **10** which is covered by the sealing material **13**.

Regarding claims 21-23, Lee discloses the semiconductor package wherein each of the leads **7** further defines an outer end; and the sealing material **13** encapsulates the lead frame such that the outer end **7** of each of the leads is exposed within the sealing material **13**, wherein the bottom sides of the leads **7** extend in generally co-planar relation to each other, wherein the top sides of the leads extend in generally co-planar relation to each other, fig. 7.

Double Patenting

6. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

7. Claims 14 to 31 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 to 7 of U.S. Patent No. 6,639,308 in view of Lee. U.S. Patent No. 6,639,308 claims most aspects of the instant invention including a leadframe with a plurality of leads with geerally planar top and bottom sides and having first and second thicknesses, a semiconductor chip partically overlapping said leads and a sealing material at least particaly encapsulating the leadframe and chip. U.S. Patent No. 6,639,308 does not claim the leads segregated inot two sets, the leads of each set being linearly aligned and arranged in spaced, substantially parallel relation to each other along the entire lengths thereof. Lee teaches to configure a semiconductor package in fig. 7, comprising: a lead frame **1**, column 4 line 7, comprising a plurality of leads **6**, column 4 lines 15-16, segregated into two sets, fig. 7, the leads of each set being linearly aligned and arranged in spaced, substantially parallel relation to each other along their entire lengths such that each of the leads of one set extends in opposed relation to a respective one of the leads of the remaining set, fig. 7, each of the leads defining opposed, generally planar top and bottom sides, a semiconductor chip **3**, column 4 line **11**, having a top surface and a bottom surface, the bottom surface partially overlapping and attached to the top side of at least one of the leads **6** of each of the sets, the semiconductor chip being electrically connected to a portion of the top side of at least one of the leads **6** which is positioned below the top surface, fig. 7; and a sealing material **13**, column 4 line 17, at least partially encapsulating the lead frame **1** and the semiconductor chip **3**, the sealing **13** having opposed, generally planar upper and lower surfaces, fig. 7 to provide a leadframe that can be used to perform the

package process regardless pf the size of the chip within the range that the number of bonding pads of the chip does not exceed the number of corresponding inner leads (Column 2 Lines 30 to 36). It would have been obvious to a person of ordinary skill in the art at the time of invention to have the leads segregated into two sets, the leads of each set being linearly aligned and arranged in spaced, substantially parallel relation to each other along the entire lengths thereof as taught by Lee in the claimed invention of U.S. Patent No. 6,639,308 to provide a leadframe that can be used to perform the package process regardless pf the size of the chip within the range that the number of bonding pads of the chip does not exceed the number of corresponding inner leads.

Response to Arguments

8. Applicant's arguments filed 5/9/2011 have been fully considered but they are not persuasive. The Applicants state that the prior art does not show the leads of each set arranged in spaced ***substantially parallel*** relation to each other ***along the entire length thereof***. However, the court has held that "substantially" is a broad term. *In re Nehrenberg, 280 F.2d 161, 126 USPQ 383 (CCPA 1960)*; see MPEP 2173.05(b)(D). In this case, replacing one broad term ("generally") with another, equally broad term ("substantially") does not impart a distinction which changes how one of ordinary skill in the art would interpret the limitations of the instant invention. Leads which are "substantially parallel" does not preclude portions being bent as stated by the BPAI. The leads of the prior art are "substantially parallel along the entire length" of said leads for the same reasons stated in the BPAI decision (i.e. they do not cross each other). The Examiner would like to further note that lines do not need to be straight to be parallel (For example, two concentric circles). In view of these reasons and those set forth in the present office action, the rejections of the stated claims stand.

Conclusion

9. Papers related to this application may be submitted directly to Art Unit 2814 by facsimile transmission. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (15 November 1989). The Art Unit 2814 Fax Center number is **(571) 273-8300**. The Art Unit 2814 Fax Center is to be used only for papers related to Art Unit 2814 applications.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Howard Weiss at **(571) 272-1720** and between the hours of 7:00 AM to 3:00 PM (Eastern Standard Time) Monday through Friday or by e-mail via **Howard.Weiss@uspto.gov**. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy, can be reached on **(571) 272-1705**.

11. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at **866-217-9197** (toll-free).

12. The following list is the Examiner's field of search for the present Office Action:

Field of Search	Date
U.S. Class / Subclass(es): 257/ 676, E23.039; 361/ 813	7/15/2011
Other Documentation: none	
Electronic Database(s): EAST	7/15/2011

HW/hw
18 July 2011

/Howard Weiss/
Primary Examiner
Art Unit 2814